

TENT COOPERATION TREA

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

GILL JENNINGS & EVERY
Broadgate House
7 Eldon Street
London EC2M 7LH
ROYAUME-UNI

Date of mailing (day/month/year)

01 December 2000 (01.12.00)

Applicant's or agent's file reference

RSJ05937WO

IMPORTANT NOTIFICATION

International application No.

PCT/GB99/03142

International filing date (day/month/year)

22 September 1999 (22.09.99)

1. The following indications appeared on record concerning:



the applicant



the inventor



the agent



the common representative

Name and Address

MADGE NETWORKS LIMITED
100 Lodge Lane
Chalfont St. Giles
Bucks HP8 4AH
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:



the person



the name



the address



the nationality



the residence

Name and Address

MADGE NETWORKS LIMITED
Wexham Springs
Framewood Road
Wexham, Slough SL3 6PJ
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:



the receiving Office



the International Searching Authority



the International Preliminary Examining Authority



the designated Offices concerned



the elected Offices concerned



other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

I. Britel

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

01 May 2000 (01.05.00)

International application No.

PCT/GB99/03142

Applicant's or agent's file reference

RSJ05937WO

International filing date (day/month/year)

22 September 1999 (22.09.99)

Priority date (day/month/year)

24 September 1998 (24.09.98)

Applicant

LEA, Martin, Roderick

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

22 March 2000 (22.03.00)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Pascal Piriou

Telephone No.: (41-22) 338.83.38

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference RSJ05937W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 99/ 03142	International filing date (day/month/year) 22/09/1999	(Earliest) Priority Date (day/month/year) 24/09/1998
Applicant MADGE NETWORKS LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

3

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/03142

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H04L12/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 018 133 A (TSUKAKOSHI MASATO ET AL) 21 May 1991 (1991-05-21)	1,6-8
A	column 4, line 14 -column 5, line 36 ----	2,9,11
X	EP 0 349 099 A (DIGITAL EQUIPMENT CORP) 3 January 1990 (1990-01-03)	1,6,7
A	column 2, line 54 -column 3, line 40 column 8, line 28 - line 53 ----	2,8,11
A	US 5 150 360 A (PERLMAN RADIA J ET AL) 22 September 1992 (1992-09-22) -----	

☐ Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

28 January 2000

Date of mailing of the international search report

09/02/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

RAMIREZ DE AREL..., F

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03142

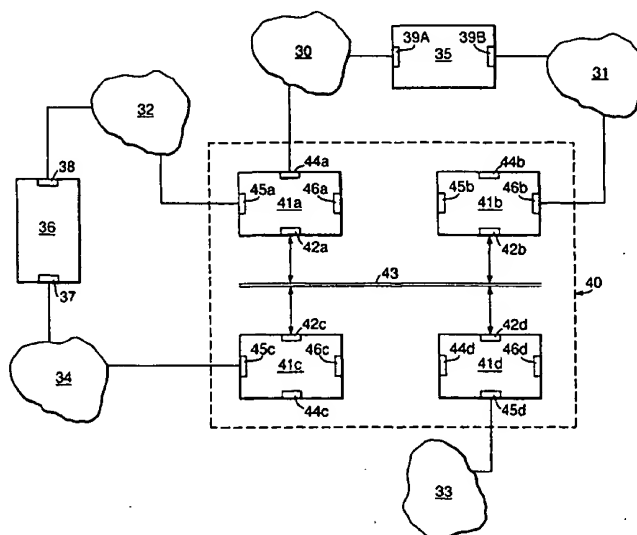
Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5018133 A	21-05-1991	DE 3838945 A JP 2001654 A JP 2781571 B	08-06-1989 05-01-1990 30-07-1998
EP 0349099 A	03-01-1990	US 4972409 A AU 600408 B AU 3312089 A CA 1319185 A DE 68921373 D DE 68921373 T JP 2044940 A US 5018137 A	20-11-1990 09-08-1990 25-01-1990 15-06-1993 06-04-1995 19-10-1995 14-02-1990 21-05-1991
US 5150360 A	22-09-1992	NONE	



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : H04L 12/46	A1	(11) International Publication Number: WO 00/18071 (43) International Publication Date: 30 March 2000 (30.03.00)
<p>(21) International Application Number: PCT/GB99/03142</p> <p>(22) International Filing Date: 22 September 1999 (22.09.99)</p> <p>(30) Priority Data: 9820830.9 24 September 1998 (24.09.98) GB 9906451.1 19 March 1999 (19.03.99) GB</p> <p>(71) Applicant (for all designated States except US): MADGE NETWORKS LIMITED [GB/GB]; 100 Lodge Lane, Chalfont St. Giles, Bucks HP8 4AH (GB).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): LEA, Martin, Roderick [GB/GB]; Welders Orchard, Welders Lane, Chalfont St. Peter, Bucks SL9 8TT (GB).</p> <p>(74) Agent: GILL JENNINGS & EVERY; Broadgate House, 7 Eldon Street, London EC2M 7LH (GB).</p>	<p>(81) Designated States: US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	

(54) Title: COMMUNICATIONS NETWORK BRIDGE



(57) Abstract

The present invention relates to a bridge for use in a group of bridges in a communications network. The communications network has a number of communications devices coupled together via a number of bridges and operates in accordance with a Spanning Tree Protocol (STP). The bridges include a number of interconnectable ports and a group port which is used to couple the bridges to the corresponding group port of at least one other bridge in the group. This provides a dedicated link which allows ports on different bridges in the group to be interconnected. The bridge also has a processor which communicates with other bridges on the network using Bridge Protocol Data Units (BPDUs). This allows an optimum path through the network to be determined, in accordance with path cost components which represent the ability of respective ports to transfer data.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 99/03142

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L12/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 018 133 A (TSUKAKOSHI MASATO ET AL) 21 May 1991 (1991-05-21)	1,6-8
A	column 4, line 14 -column 5, line 36 ---	2,9,11
X	EP 0 349 099 A (DIGITAL EQUIPMENT CORP) 3 January 1990 (1990-01-03)	1,6,7
A	column 2, line 54 -column 3, line 40 column 8, line 28 - line 53 ---	2,8,11
A	US 5 150 360 A (PERLMAN RADIA J ET AL) 22 September 1992 (1992-09-22) -----	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

28 January 2000

Date of mailing of the international search report

09/02/2000

Name and mailing address of the ISA

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Authorized officer

RAMIREZ DE AREL... F

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/GB 99/03142

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5018133 A	21-05-1991	DE 3838945 A JP 2001654 A JP 2781571 B	08-06-1989 05-01-1990 30-07-1998
EP 0349099 A	03-01-1990	US 4972409 A AU 600408 B AU 3312089 A CA 1319185 A DE 68921373 D DE 68921373 T JP 2044940 A US 5018137 A	20-11-1990 09-08-1990 25-01-1990 15-06-1993 06-04-1995 19-10-1995 14-02-1990 21-05-1991
US 5150360 A	22-09-1992	NONE	

PATENT COOPERATION TREATY


PCT

REC'D 30 NOV 2000

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference RSJ05937WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/03142	International filing date (day/month/year) 22/09/1999	Priority date (day/month/year) 24/09/1998
International Patent Classification (IPC) or national classification and IPC H04L12/46		
Applicant MADGE NETWORKS LIMITED et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none">I <input checked="" type="checkbox"/> Basis of the reportII <input type="checkbox"/> PriorityIII <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicabilityIV <input type="checkbox"/> Lack of unity of inventionV <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statementVI <input type="checkbox"/> Certain documents citedVII <input checked="" type="checkbox"/> Certain defects in the international applicationVIII <input checked="" type="checkbox"/> Certain observations on the international application		
Date of submission of the demand 22/03/2000	Date of completion of this report 27.11.2000	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Palacián Lisa, M Telephone No. +49 89 2399 8265	



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/03142

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:

Description, pages:

1-6,8-18	as originally filed		
7	as received on	09/10/2000 with letter of	06/10/2000

Claims, No.:

5-15	as originally filed		
1-4	as received on	09/10/2000 with letter of	06/10/2000

Drawings, sheets:

1/4-4/4	as originally filed
---------	---------------------

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/03142

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-15
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-15
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03142

Reference is made to the following document:

D1: US-A-5 018 133

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The application relates to a bridge (claim 1) and a method (claim 11) for use in a group of bridges in a communications network, the communications network having a number of communications devices coupled together via a number of bridges and operating in accordance with a Spanning Tree Protocol STP. The bridge comprises a number of interconnectable ports and a group port couples the grouped bridge to a corresponding group port of at least one other grouped bridge via a group link, the group link being provided to allow ports on different grouped bridges to be interconnected. It also comprises a processor adapted to communicate with other bridges on the network using Bridge Protocol Data Units BPDUs to allow an optimum path through the network to be determined, wherein the optimum path is determined in accordance with path cost components which represent the ability of respective ports to transfer data.

Such an apparatus and method are known from D1.

- 1.1 The application solves the problem of ensuring that data is transferred between bridges in the group as the preferred route when possible by assigning a path cost component of zero to the group port in the bridge.
2. Neither of the documents cited in the International Search Report show or suggest this solution.

D1 discloses a group of bridges using the Spanning Tree Protocol where a bridge is set as the root bridge. This root bridge transmits periodically a 'Hello' message, the

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03142

path cost being zero only when the bridge initiates this message and not in every data transfer. D2 (EP-A-0 349 099) also deals with bridges implementing a STP but no zero cost paths are disclosed.

3. Claims 1 and 11 meet the requirement of Article 33 PCT.
4. Claims 2-10 and 12-15 are dependent on claim 1 and 11, respectively, and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VII

Certain defects in the international application

1. Independent claim 10 is not in the two-part form as required by Rule 6.3(b) PCT, whereby the features already disclosed in document D1 should have been placed in the preamble.
2. Reference signs in parentheses should have been inserted in the claims to increase their intelligibility (Rule 6.2(b) PCT). This applies to both the preamble and characterising portion.
3. To meet the requirements of Rule 5.1(a)(ii) PCT, document D1 should have been identified in the description and its relevant content should have been briefly indicated.

Re Item VIII

Certain observations on the international application

1. It is clear from the description on page 8, lines 23-30, page 9, lines 22-25 and page 12, lines 16-26, that the feature of a unique bridge identifier for all the bridges in the group is essential to the definition of the invention.

Since independent claim 1 does not contain this feature, it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03142

that any independent claim must contain all the technical features essential to the definition of the invention.

2. It is not clear (Article 6 PCT) whether the term "ports" in claim 1, line 12, and claim 11, line 31, refers to the "group port" already defined in the claims or to a general port.
3. The term "modified version of that defined by the IEEE 802.1D standard" in claim 15 is vague and imprecise (Article 6 PCT) and renders the scope of the claim unclear.

a number of interconnectable ports;

a group port which couples the grouped bridge to a corresponding group port of at least one other grouped bridge via a group link, the group link being provided to allow ports on different grouped bridges to be interconnected; and,

a processor, the processor being adapted to communicate with other bridges on the network using Bridge Protocol Data Units (BPDUs) to allow an optimum path through the network to be determined, wherein the optimum path is determined in accordance with path cost components which represent the ability of respective ports to transfer data, characterised in that the group is assigned a path cost component of zero.

Thus the present invention provides a bridge which can be linked to one or more other bridges according to the invention via a dedicated group link. The group link is only used for transferring data between the bridges, thereby removing the need for data to be transferred between bridges across other communication devices such as local area networks, or the like. The bridges according to the invention can be connected to standard network bridges in the normal way.

In accordance with a second aspect of the present invention, we provide a method of implementing a Spanning Tree Protocol (STP) on a communications network including a number of grouped bridges, the communications network having a number of communications devices coupled together via a number of bridges, each grouped bridge having a number of interconnectable ports including a group port which couples the grouped bridge to a corresponding group port of another grouped bridge via a group link, the group link being provided to allow ports on different grouped bridges to be interconnected, wherein the STP causes bridges in the network to communicate with each other using Bridge Protocol Data Units (BPDUs) to determine an optimum path through the network, the optimum path being determined in accordance with path cost components representative of

CLAIMS

1. A bridge for use in a group of bridges in a communications network, the communications network having a number of communications devices coupled together via a number of bridges and operating in accordance with a Spanning Tree Protocol (STP), the bridge comprising:
- a number of interconnectable ports;
 - a group port which couples the grouped bridge to a corresponding group port of at least one other grouped bridge via a group link, the group link being provided to allow ports on different grouped bridges to be interconnected; and,
 - a processor, the processor being adapted to communicate with other bridges on the network using Bridge Protocol Data Units (BPDUs) to allow an optimum path through the network to be determined, wherein the optimum path is determined in accordance with path cost components which represent the ability of respective ports to transfer data, characterised in that the group port is assigned a path cost component of zero.
2. A bridge according to claim 1, wherein each BPDU includes a bridge identifier representative of the bridge which generated the BPDU wherein the processor is adapted to set the path cost component of the group port equal to zero and each time a bridge in the group receives a BPDU via a port other than the group port, to cause the bridge to generate and transmit a new BPDU to the group port, the new BPDU having the bridge identifier and the port identifier of the received BPDU.
3. A bridge according to claim 2, the bridge including a store which stores the bridge identifier and the path cost component associated with each respective port.
4. A bridge according to claim 3, wherein the STP uses a port identifier associated with each bridge port, the port identifier representing the priority of the port, and wherein the port identifier of each port in the bridge is stored in the store.